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# Shared goals and development

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## **Abstract**

In ‘Joint Action and Development’, Stephen Butterfill argues that if several agents’ actions are driven by what he calls a “shared goal”—a certain pattern of goal-relations and expectations—then these actions constitute a joint action. This kind of joint action is sufficiently cognitively undemanding for children to engage in, and therefore has the potential to play a role in fostering their understanding of other minds. Part of the functional role of shared goals is to enable agents to choose means that are appropriate to realising a goal with others rather than individually. By offering a counterexample, I show that the pattern of goal-relations and expectations specified by Butterfill cannot play this role. I then provide an appropriately conceptually and cognitively undemanding amendment with which the account can be saved.

# 1 Introduction

Stephen Butterfill (2012) asks what joint action could be given that it plays a role in fostering children’s understanding of other minds. It could not be action that is the outcome of what Bratman (1993) calls a ‘shared intention’. To take part in such a shared intention, a child would need to have the very understanding of other minds that we are supposing joint action to foster. Butterfill therefore gives an account of a kind of joint action that doesn’t depend on shared intention, and which could potentially facilitate children’s understanding of others.<sup>1</sup> By offering a counterexample, I show that Butterfill’s account cannot quite play the role that he envisages for it. I then provide an amendment with which the account can be saved.

According to Butterfill, several agents’ actions constitute a goal-directed joint action if they are appropriately caused and coordinated by a certain pattern of goal-relations and expectations. The pattern is characterised by the following features, which are supposed to be collectively sufficient:

- a. *one goal, two or more agents* —  
there is a single goal, G, to which each agent’s actions are,  
or will be, individually directed;
- b. *identification* —  
each agent can identify each of the other agents in a way that  
doesn’t depend on knowledge of the goal or actions directed  
to it;

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<sup>1</sup>Other accounts that have been constructed with similar theoretical aims in view include Deborah Tollefsen’s (2005) account of shared intention-in-action and Elisabeth Pacherie’s (2013) team-agency account of shared intention.

c. *expectations about goal-directed actions* —

on balance each agent expects each of the other agents she can identify to perform an action directed to the goal; and

d. *expectations about a common effect* —

on balance each agent expects this goal to occur as a common effect of all of their actions directed to the goal, her own and the others’.

(Butterfill, 2012, p. 40)

These features do not require the agents to attribute mental states to each other. The term ‘goal’ refers to an outcome that an action is directed to, not to the content of an intention or other goal-directed state of the agent. Hence, the features only require the agents to be able to recognise and conceive of actions as directed to outcomes (Butterfill and Apperly, 2013; Csibra and Gergely, 2007). This is not overly demanding for an account of a kind of joint action that could play a role in fostering understanding of other minds (Woodward, 1998; Carpenter et al., 1998; Behne et al., 2005). Furthermore, the term ‘expectation’ here refers to a kind of belief-like state that developmental psychologists take to control behaviours such as eye movements and looking times. Such a state need not be about the future, and need not be a full-blown belief.

Butterfill takes features (a) to (d) to specify a pattern that can realise a ‘shared goal’. This is Butterfill’s technical term for a psychological pattern with the functional role of coordinating “plural activities”—activities in which a single outcome  $G$  is satisfied as a common effect of the actions of

several agents, each of which is individually directed to G. He illustrates this idea as follows:

[...] Amin and Bertram each individually aim to put a large barrel into a boat. Either of them could move the barrel into the boat alone or their doing this could be a plural activity; the choice is theirs. The sequence of activities Amin would need to perform to put the barrel in the boat differs depending on whether he is acting alone or with Bertram. Acting alone, Amin would position himself so that the barrel and boat are in front of him, throw his arms around the middle of barrel, raise it, tilt back and then push up and forwards. If he chose to act with Bertram, Amin would need to take an entirely different approach. It is this need that shared goals answer.

(Butterfill, 2012, p. 38)

According to Butterfill, the pattern of goal-relations and expectations that he specifies can play this functional role in part because features (c) and (d) “are jointly equivalent to requiring that the each [sic] agent expects that she and the other agents are engaged in a plural activity with goal G.” (2012, p. 42)

Why must having a shared goal entail an expectation on each agent that they are involved in a plural activity? Beyond enabling agents to choose means appropriate for acting with others, perhaps it is needed for explaining how shared goals could facilitate children’s understanding of others. The following is not quite Butterfill’s thought, but it is in the spirit of a hypothesis

he presents elsewhere (see Butterfill, 2013): If a child expects that it is involved in a plural activity with an adult and if it knows which goal its own actions are directed to, then the child would be licensed to infer that unfamiliar actions performed by the adult are also directed to this goal. In this way, having a shared goal with an adult could provide the child with a framework for understanding unfamiliar actions and means (such as the use of an unfamiliar tool with an unknown function, as suggested by Butterfill, 2013, pp. 854-5). However, it could only provide such a framework if it ensures that the child expects that it is involved in a plural activity, that is, if it ensures that the child expects that the other's actions are directed to the goal that its own actions are directed to.

Unfortunately, as I will now show, the pattern of expectations defined by (a) to (e) cannot play the role that Butterfill intends it to play.

## 2 The counterexample

Consider Amin and Bertram, who each individually aim to put the large barrel into the boat. Suppose that the large barrel is lying on its side in front of Amin and Bertram. Between them and the barrel stands a pillar that blocks their view of the barrel's mid-section. Now, suppose that each is under the mistaken impression that there are two barrels, one to the left and one to the right of the pillar. Each thinks that there is empty space behind the pillar, rather than the barrel's mid-section. Amin and Bertram both represent the goal of Amin's actions as "that the barrel visible on the left side of the pillar is put into the boat", and they both represent the goal

of Bertram's actions as "that the barrel visible on the right side of the pillar is put into the boat". As it happens, for the (single) barrel to drop into the boat, it must be pushed through a heavy door that tilts back around a horizontal pivoting axis. Each of Amin and Bertram expects that the door will be pushed open as an effect of both their actions. As a consequence, each expects the outcome "that the barrel visible on the left side of the pillar is put into the boat" to occur as a common effect of their actions. Each also expects the outcome "that the barrel visible on the right side of the pillar is put into the boat" to occur as a common effect of their actions. These expectations are all about a single outcome but they represent that outcome under different "aspectual shapes" (Searle, 1992, p. 155) and this makes it possible for each to mistakenly believe that there is no single goal toward which all their actions are directed.

According to a reasonable interpretation of Butterfill's account, Amin and Bertram would here have a shared goal to put the barrel into the boat. Feature (a) is present, since the actions of both are directed to the single outcome G that the barrel is put into the boat. Feature (b) is also present, since each of them is aware of the other's presence; they can each see and hear the other. Now, their expectations regarding their actions and the common effect represent G under different aspects, but on a reasonable interpretation, (c) and (d) do not fix the aspect under which G must be represented in the agents' expectations. Hence, that there is a single goal G such that Amin expects his own actions to be directed to it and such that he expects Bertram's actions to be directed to it does not entail that Amin also expects that there is a single goal G such that his own actions are directed to it and so

are Bertram's. Both Amin and Bertram can therefore expect that their own and the other's actions are directed to distinct goals, despite the presence of features (a) to (d). Each of them expects that they are *not* engaged with the other in plural activity. They are thus not in a position to choose means that are appropriate to performing a plural activity rather than bringing about some effect individually (for example, they could fail to appropriately choose to push the barrel at the same time and from the most appropriate places). The pattern (a) to (d) thus fails to play its assigned functional role. Hence, this is a counterexample to a reasonable interpretation of Butterfill's account.

### 3 Why the aspect shouldn't be fixed

There is an interpretation of Butterfill's account according to which the case I have just described does get ruled out. On this interpretation, 'the goal' and 'this goal' in (c) and (d) refer to G represented under a certain fixed aspect, so that features (c) and (d) are present only if each of the agents' expectations represent G under that aspect. When read this way, features (c) and (d) are not present in the case of Amin and Bertram. And on this fixed-aspect interpretation, several agents could not have a shared goal while failing to realise that there is a single goal that their actions, their own and the others', are all directed to. However, this constraint on how the agents can represent G is too strong, and its introduction seems *ad hoc*.

Suppose that there is no pillar in the Amin and Bertram case and neither of them is under the mistaken impression that their actions have distinct goals. However, suppose that Bertram is blind. He thus represents the goal



of his own and Amin’s actions as the outcome “that the barrel that I touched previously, when standing over there, is put into the boat”. Amin’s sight remains fine though, so he represents the goal of his own and Bertram’s actions as “that the barrel visible over there is put into the boat”. Suppose further that each of them expects this outcome to occur as a collective effect of their actions and that it does occur in this way. On the fixed-aspect interpretation of conditions (a) to (d), Amin and Bertram would in this case not have a shared goal. But why would the difference in how the agents represent the single goal itself undermine their actions from constituting a joint action driven by shared goals?<sup>2</sup> Arguably, Butterfill’s account should accommodate such a case. It would not be a counterexample to the account, since Butterfill’s features are not supposed to be necessary but only collectively sufficient. Nevertheless, agents will often represent G under different aspects when engaged in coordinated goal-directed joint action and the account would fail to accommodate all such cases. This would clearly make Butterfill’s account unsatisfactory.

So it appears that Butterfill’s account needs some constraint on under what aspects the agents represent G. However, the only constraint that can be read into the account is clearly too strong. At the same time, it is hard to see what sort of other constraint on aspectual shape that could help here. Consider Seumas Miller’s requirement that agents must aim at a single goal (or end) “under more or less the same description” for their actions to con-

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<sup>2</sup>Or consider the case of a guide dog and its blind owner walking to a supermarket together. The dog and its owner probably represent the destination under very different aspects, but this wouldn’t stop their walking from being a coordinated goal-directed joint activity.

stitute a joint action directed to that goal (2001, p. 58). For a constraint on aspectual shape in this vein to rule out the counterexample but still accommodate the case of Amin and blind Bertram, it must, first, be the case that “the barrel visible on the left side of the pillar is put into the boat” and “the barrel visible on the right side of the pillar is put into the boat” are not more or less the same aspectual shape (otherwise the counterexample isn’t ruled out). Secondly, it must be the case that “the barrel that I touched previously, when standing over there, is put into the boat” and “the barrel visible over there is put into the boat” are more or less the same aspectual shape (otherwise, the case of Amin and blind Bertram is not accommodated). It seems forlorn that there exists a metric of similarity for aspectual shapes that would deliver these results. Note also that it is important for Butterfill that his account doesn’t require agents to represent under which aspects others (or themselves) represent G, at least if we take such a meta-representational capacity to be part of what joint action is supposed to foster.

## 4 The missing feature

What Butterfill needs to rule out the counterexample I have presented, while allowing agents to represent G under different aspects, is the following surprisingly simple amendment:

e. *expectations about a single goal* —

each agent expects that G is a single goal to which all the agents’ actions, her own and the others’, are directed.

This feature is not present in the counterexample I presented, and it thus successfully rules it out. Moreover, the feature can be present even if the agents represent  $G$  very differently, as it doesn't at all constrain under which aspects the agents represent  $G$ . It thus allows that agents such as Amin and blind Bertram be engaged in joint action driven by shared goals. The feature also ensures that each agent expects that all the agents are involved in a plural activity.

To rationally arrive at the expectation required by (e), must each agent be able to represent and compare the aspects under which she and the other agents represent  $G$ ? If this was the case, then the feature would require agents to attribute mental states to others, and it would thus be unsuitable for an account of joint action that could foster children's understanding of other minds. One might think that if the agents represent the goal under very different aspects, then their expectations about a single goal will be undermined. However, this worry rests on a mistaken view of how agents form beliefs about goals. If Amin and Bertram are approaching the barrel to put it into the boat, Amin's expectation that there is single goal that his own and Bertram's actions are directed to need not be formed according to a procedure of the following kind: Figure out under what aspect the other agent represents the goal of her action; compare this aspect with the aspect under which I represent the goal of my own action; and on the basis of this comparison, judge whether or not there is a single goal that I and the other are both representing. Perhaps there are rare cases where we do something like this, but they are hardly typical. Rather, the basis for Amin's expectation might simply be cues like the following: that he and Bertram

exchange glances with each other and toward the large barrel, that they orient their postures and steps toward said barrel, that the barrel itself is constructed in such a way that it can be conveniently pushed or lifted by two individuals like Amin and Bertram, that they have moved barrels like this together before, and so on. Generally, expectations about a single goal might be formed on the basis of many different considerations, depending on context and the type of joint action. Any meta-representing of under which aspect others represent the goal  $G$  will be of secondary import, made (if at all) after it has been established that  $G$  is a single goal to which all the agents' actions are directed.<sup>3</sup>

Feature (e) is thus congenial for Butterfill. It doesn't introduce any demand that participants be able to attribute mental states such as intentions or beliefs to others. Nor does it require that agents judge that the goal of her own action is identical to the goal of the others' action. It is sufficient that each agent recognises that there is a single goal  $G$  to which all their actions are directed to. Indeed, evidence from developmental psychology suggest that even infants are able to recognise that there is a single goal to which the actions of two agents are directed (Henderson and Woodward, 2011; Henderson et al., 2013; Fawcett and Gredebäck, 2013).<sup>4</sup>

At this point, someone might object that I have not considered an interpretation of Butterfill's account according to which (e) is already implied by the presence of features (a) to (d). On this interpretation, 'the goal' and

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<sup>3</sup>See Campbell (2011) and Moll & Meltzoff (2011) for an analogous point about the relation between joint visual attention and visual perspective-taking.

<sup>4</sup>At least, this is a plausible lean interpretation of what the results of the experiments in question show.

‘this goal’ in (c) and (d) refer to G represented under a certain aspect that is fixed *for each agent*—intra-agentially so to speak—but it is free to vary between the agents. Features (c) and (d) would then be present only if for each agent represents the goal G of their own action under the same aspect as they represent the goal G of the others’ actions. Since same aspect implies the same extension, feature (e) would always be present when (a) to (d) are present. This intra-agential fixed-aspect interpretation is far from obvious though, and settling on it would be a forced response to the example cases I have presented. Feature (e) on the other hand, can be independently motivated. It should be introduced because it articulates something that is at the heart of an everyday notion of joint action, namely that it involves agents acting in the belief or expectation that there is a single goal that all their actions, their own and the others’, are directed to.

## 5 Conclusion

I have argued that Butterfill (2012) either fails to provide sufficient conditions for shared goals, or else fails to accommodate clear cases of joint action where agents represent the goal of the joint action under different aspects. Fortunately, I have also provided an amendment that can save Butterfill’s account. When agents have a shared goal, each expects that G is a single goal to which all their actions, her own and the others’, are directed. Appropriately for Butterfill’s account, this additional feature is cognitively and conceptually undemanding.<sup>5</sup>

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